

# Relation between participating in playgroup with child development

Elsa Maimon<sup>1\*</sup>, Djauhar Ismail<sup>2</sup>, Mei Neni Sitaresmi<sup>2</sup>

<sup>1</sup>Kanujoso Djatiwibowo District Hospital, Balikpapan, East Kalimantan, <sup>2</sup>Department of Pediatrics, Faculty of Medicine, Universitas Gadjah Mada/Dr. Sardjito General Hospital, Yogyakarta, Indonesia

## ABSTRACT

Playgroup is one of early education programs to promote child development. A cohort study found that early education program resulted in better social performance. However this study did not evaluate the influence of this program on child development. The aim of this study was to evaluate whether participating in playgroup relates to child development achievement. This was a cross sectional study conducted on children in Yogyakarta Special Region. The subjects were children in the first month of kindergarten. The child development was tested using Denver II. Other data were collected by questioners and filled by their parents. Chi-square test was used to analyze the factors that influenced the child development. One hundred and seventy two children participated in the study. It was found that the development achievement of children participating in playgroup were 3.2 times better than those not participating in playgroup ( $p=0.002$ ; OR: 3.248; 95% CI: 1.558-6.774), whereas gender, education of parents, number of siblings, and birth weight were not associated with the child development achievement. In conclusion, joining the playgroup relates to the child achievement development.

## ABSTRAK

Kelompok bermain merupakan salah satu program pendidikan usia dini untuk mendorong perkembangan anak. Sebuah penelitian kohort menunjukkan program pendidikan usia dini membentuk kehidupan sosial lebih baik bagi anak. Namun demikian, penelitian ini tidak mengkaji pengaruh program tersebut terhadap perkembangan anak. Penelitian ini bertujuan untuk mengkaji apakah keikutsertaan dalam kelompok bermain berhubungan dengan capaian perkembangan anak. Penelitian ini merupakan penelitian potong lintang yang dilakukan di Daerah Istimewa Yogyakarta dengan subjek anak taman kanak-kanak yang baru satu bulan bersekolah. Perkembangan anak dievaluasi dengan Denver II, sedangkan data lain diperoleh melalui kuesioner yang diisi oleh orang tua anak. Uji Chisquare digunakan untuk menganalisa faktor-faktor yang mempengaruhi perkembangan anak. Seratus tujuh puluh dua anak berpartisipasi dalam penelitian. Hasil penelitian menunjukkan capaian perkembangan anak yang mengikuti kelompok bermain 3,2 kali lebih baik dari pada anak yang tidak mengikuti kelompok bermain ( $p=0,002$ ; OR: 3,248; 95% CI: 1,558-6,774). Sedangkan jenis kelamin, pendidikan orang tua, jumlah saudara tidak berhubungan dengan capaian perkembangan anak. Dapat disimpulkan, keikutsertaan anak dalam kelompok bermain berhubungan dengan capaian perkembangannya.

**Keywords:** playgroup - child development - Denver II test - kindergarten - education

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\* corresponding author: [elsamaimon@yahoo.com](mailto:elsamaimon@yahoo.com)

## INTRODUCTION

Every child grows and develops through a process of learning about him or herself and the world around him or her. Along with the learning process, children are also experiencing growth and development physically and mentally. These developments include aspects of motor, cognitive, language and social development.<sup>1,2</sup>

Early childhood is a critical period in child development. Based on the study of neurology, at the time of birth, baby's brain contains about 100 billion neurons that are ready to relate and connect between cells. During the first years, baby's brain develops rapidly to produce billion synapses between neurons. Synapse should be strengthened through a variety of psychosocial stimulations, because the synapse that has not been stimulated will become atrophy and disappears. This is what will ultimately affect the level of intelligence of children.<sup>3,4</sup> In this period, stimulation is important in child development. Children who receive regular and effective stimulation will grow faster than children who lack of stimulation.<sup>1</sup> In children who rarely get educational stimulation, the brain development is 20-30% smaller than the normal size of their age. Other study disclosed that about 50% of human intelligence capabilities occur when he/she is 4 years old, 80% occurred when he/she is 8 years old. The human intelligence reaches its culminating point when the child is 18 years old. This means that the developments that occur in the first 4 years is as great as the development of the next 14 years.<sup>3</sup>

Parents always hope to provide the best for their children. They will try to meet all the needs of children including the need for education that will help the development of the children. However, parents cannot create, accelerate, or ignore the child's stage of

readiness in the growth process. Readiness and accelerating development of the child are different as each child is a unique individual. However, this does not mean that parents cannot have a standard for behavior and performance expectations for their children. Understanding the principles of individual uniqueness, the parents can set expectations according to what stage of development based on age of growth, the child's condition, and growth stage.<sup>5,6</sup>

Playgroup is an early childhood education, which is currently being demanded by parents to foster children. There are many reasons for parents to put children into playgroups. For example, hoping that their children will develop more quickly than their age, entrusting the children to be taken care of because both parents work, or simply wanting their children to play with their peers because most of them live in housing or apartment complexes.

There are many parents who are wondering about the importance of joining a playgroup for their children's development. There are many questions, as well as informations in magazines, tabloids, or the internet sites that discuss education for their children. The questions are whether children need to join the playgroup, whether they will not be bored joining the playgroup, or whether the playgroup is beneficial for their development.

It is important to evaluate whether the playgroup contributes to the achievement of child development. This study was expected to produce results which can provide further information about the importance of the playgroup to foster children.

## MATERIALS AND METHODS

This was a cross sectional study held in August 2009 in the kindergartens in Yogyakarta Special Region. The subjects were children who attended kindergarten in Yogyakarta Special

Region who met the inclusion and exclusion criteria. The inclusion criteria were children in the first month of kindergarten in Yogyakarta Special Region, and willing to follow the study (the parents fill out the informed consent). The exclusion criteria included children with congenital abnormalities, and children who cannot be tested. The protocol of the study was approved by the the Medical and Health Research Ethics Committee, Faculty of Medicine, Universitas Gadjah Mada, Yogyakarta.

Sample size was calculated with test of two proportions and the number of subjects was 172 subjects.<sup>7</sup> Purposive sampling was conducted based on the consideration of permit ease of research and accessible location. The samples were taken from three kindergartens namely Sleman Kindergarten, Budi Mulia 1 Kindergarten, and Wijaya Kusuma Kindergarten.

The assessment of child development used the Denver II test. Data were analyzed using Chisquare test. Characteristics of the study subjects were calculated using descriptive analysis, and logistic regression analysis was used to determine and identify other factors related to the outcomes.

## RESULTS

One hundred and seventy two subjects from three kindergartens were recruited in this study. The characteristics of subjects are presented in TABLE 1. It appeared that the number of subjects between boys and girls were nearly equal. Father and mother education were largely included to high education, meaning they had gone through nine years of basic education. Most children were born with adequate birth weight, with only 9.3% subjects who were born < 2500 grams. There was a total of 69.8% subjects with normal developmental status and 30.2% with advanced development. Fifty-two percent of subjects were participating in playgroups and most of them had participated for d" 2 years. There

was only 12.2% who had participated in playgroup >2 years.

TABLE 1. Characteristics of study subjects

Variables	N (172)	% (100 %)
Gender		
• Male	92	53.5
• Female	80	46.5
Father's education		
• Low (= 9 year)	17	9.9
• High (>9 year)	155	90.1
Mother's education		
• Low (= 9 year)	14	8.1
• High (>9 year)	158	91.9
Number of siblings		
• ≤ 2	133	77.3
• > 2	39	22.7
Birth weight		
• LBW	16	9.3
• NBW	156	90.7
Development status		
• Normal	120	69.8
• Advanced	52	30.2
Participating in playgroup		
• Yes	90	52.3
• No	82	47.7
Duration of participating in playgroup *		
• ≤ 2 years	79	87.8
• > 2 years	11	12.2

\* Only in the group that followed the playgroup; LBW: low birth weight; NBW: normal birth weight

Factors related to child development are presented in TABLE 2. The output taken into account was advanced and normal child development. The results showed that joining the playgroup affects the child development. The advanced development was higher in children who had followed the playgroup (20.9%) compared to those who had not followed the playgroup (9.3%) (p=0.00). Further analysis using multivariate analysis showed that joining the playgroup contributes to the child development in this study, while father's education did not influence the child development.

TABLE 2. Factors related to child development

Variables	Normal N(%)	Advanced N(%)	p
Gender			
• Male	67 (39.0)	25 (14.5)	0.22
• Female	53 (30.8)	27 (15.7)	
Father's education			
• Low	14 (8.1)	3 (1.7)	0.18
• High	106 (61.6)	49 (28.5)	
Mother's education			
• Low	11 (6.4)	3 (1.7)	0.34
• High	109 (63.4)	49 (28.5)	
Number of siblings			
• ≤ 2	92 (53.5)	41 (23.8)	0.46
• > 2	28 (16.3)	11 (6.4)	
Birth weight			
• LBW	11 (6.4)	5 (2.9)	0.56
• NBW	109 (63.4)	47 (27.3)	
Participating in playgroup			
• Yes	54 (31.4)	36 (20.9)	0.00
• No	66 (38.4)	16 (9.3)	
Duration of participating in playgroup*			
• ≤ 2 years	45 (50.0)	34 (37.8)	0.10
• > 2 years	9 (10.0)	2 (2.2)	

\* Only in the group who join the playgroup; LBW: low birth weight; NBW: normal birth weight

TABLE 3. Multivariate analysis of factors related to child development

Variables	p	OR	95% CI
Joining playgroup	0.002	3.248	1.558-6774
Father's education	0.688	0.750	0.185-3.048

## DISCUSSION

This cross sectional study was conducted at three kindergartens in Yogyakarta Special Region in order to evaluate whether joining the playgroup contributes to child development. In addition, this study also aimed to investigate whether the gender of the child, father and mother education, number of siblings, and birth weight of the children affected their development. No development delay in all subjects was observed in this study. Therefore,

further evaluation has been conducted based on advance and normal child development.

Since childhood, a child has been affected by the sense of the classification of sex, social expectations and behaviors that are different between male and female. Thus, children start to identify themselves according to the values, expectations and behavior patterns received from the environment. This condition will affect the development of the children.<sup>8</sup> The results showed that gender did not give significant

difference in the achievement of the development of children ( $p=0.22$ ). Similar results were obtained in previous study conducted by Nurhayati *et al.*<sup>9</sup> and Fadlayana *et al.*<sup>10</sup> which reported that gender has no effect on child development.

Children with low maternal education have high risk for developmental disruption. In this study there was only 9.9% of children with low father's education level and 8.1% of children with low mother's education. However, no significant difference was observed between low and high father's education ( $p=0.184$ ) and between low and high mother's education ( $p=0.34$ ). Multivariate analysis also showed that father's education did not relate with child development ( $p:0.688$ ; OR: 0.75; 95% CI: 0.185-3.048). This result is not in accordance with results reported by Fadlayana *et al.*<sup>10</sup> which stated that maternal education affected child development. This condition occurred might be due to the application of purposive sampling which resulted in the lack of variety of subjects

In this study, the majority of children who have number of siblings  $\leq 2$  were 133 children (77.3%) consisting of 92 (53.5%) children with normal development and 41 (23.8%) children with advanced development. Meanwhile, the children who have number of siblings  $> 2$  were only 39 (22.7%) consisting of 28 (16.3%) children with normal development and 11 (6.4%) children with advanced development. Bivariate analysis showed that there was no significant difference between children who have number siblings  $\leq 2$  and  $> 2$  ( $p=0.46$ ). These conditions support the achievement of one of the family planning goals which is increasing the number of families that are able to carry out the parenting and child development well and properly.<sup>11</sup>

Children with LBW are reported to have high risk of development disorders. However, in this study, child development was not influenced by birth weight. No significant difference in child development was observed between the children with LBW and NBW ( $p=0.564$ ). Different results

were obtained in a study conducted by Mc Cormick *et al.*<sup>12</sup> stating that the LBW children who were given pre-school education had better cognitive abilities. As a condition associated with prematurity, low birth weight will affect the child's development. Catch-up growth occurs until the child is 2 years old. Because the study subjects aged  $>2$  years in this research, the study on children with a history of prematurity was not conducted.

In this study, it was found that children participating in playgroup had more rapid development compared to those not participating in playgroup ( $p=0.003$ ). Moreover, multivariate analysis found that children who participate in playgroup gained 3.2 times better development than children who do not ( $p=0.002$ ; OR: 3.248; 95% CI: 1.558-6.774).

Soetjningsih<sup>1</sup> reported that children with regular and effective stimulation will grow and develop faster than children without stimulation. Participating in playgroup is one of stimulations of child development. The stimulation can develop cognitive abilities, physical or motor, social and emotional aspects of the child.<sup>13</sup> However, the stimulation should be accompanied with adequate nutritional intake in order to obtain optimal development.<sup>14</sup> It is indicated that child development is associated with parenting, nutritional intake and stimulation.

Although participating in playgroup influenced child development, the duration of participating in playgroup did not influence child development ( $p=0.10$ ). This result is in contrast to the result reported by Widyastuti *et al.*<sup>15</sup> who compared the numerical and visual-motor skills of children of regular kindergarten with integrated kindergarten. It was reported that the numerical and visual-motor skills of children who joined the integrated kindergarten was better than the ones joining the regular kindergarten. The duration of children joining integrated kindergarten is normally longer than those joining regular kindergarten.

The weakness of this study is the use of purposive sampling, which makes greater risk of selection biased and the study subjects obtained do not vary. Therefore, the results cannot be generalized because the samples are not representative. The instrument used was not a diagnostic tool but only a screening tool. The Denver II was used because it is cheap and an easy tool to use. Moreover, it can be used for children up to age 6 years old.

## CONCLUSION

In conclusion, joining the playgroup relates to the achievement of child development. Gender, education of parents, number of siblings, and birth weight are not associated with the achievement of child development.

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## REFERENCES

1. Soetjningsih. Tumbuh kembang anak. Jakarta: EGC Penerbit Buku Kedokteran, 1995.
2. Nixon D and Aldwinckle M. Exploring: child development from three to six years. 2<sup>nd</sup> ed. Katoomba: Social Science Press, 2003.
3. Nash JM. Otak anak-anak. Jakarta: Tira Pustaka, 1997.
4. Bloom B, Sosniak LA. Developing talent in young people. New York: Ballantine, 1985
5. Harjaningrum A. Peranan orang tua dan praktisi dalam membantu tumbuh kembang anak berbakat melalui pemahaman teori dan tren pendidikan. Jakarta: Prenata Media Group, 2007.
6. Polland M. An introduction to gifted education. Florida: Florida Department Education, 2004.
7. Dahlan M. Besar sampel dalam penelitian kedokteran dan kesehatan. Jakarta: PT Arkans, 2006.
8. Eunike. Kebutuhan dan perkembangan anak. [serial online] 1999 [cited 2011 March 27<sup>th</sup>]. Available from: <http://www.reocities.com>.
9. Nurhayati I, Naning R, Sadjimin T. Pola perkembangan balita di Kotamadia Yogyakarta menurut orang tua. Yogyakarta: INSKA RSUP Dr. Sardjito, 2006.
10. Fadlayana E, Alisjahbana A, Nelwan I, Noor M, Selly, Sofiatun Y. Pola keterlambatan perkembangan balita di daerah pedesaan dan perkotaan Bandung, serta faktor-faktor yang mempengaruhinya. Sari Pediatri 2004; 4(4): 175-86.
11. Anonim. Peningkatan kualitas sumber daya manusia melalui Program Keluarga Berencana Nasional. Jakarta: BKKBN, 2002.
12. McCormick MC, Brooks-Gunn J, Go SL, Goldman J, Yu J, Salganik M. Early intervention in low birth weight premature infants: results at 18 years of age for the infant health and development program. Pediatrics 2006; 117: 771-80.
13. Anonim. Acuan menu pembelajaran pada pendidikan anak usia dini. Jakarta: Departemen Pendidikan Nasional Republik Indonesia, 2002.
14. Jalal F. Stimulasi otak untuk mengoptimalkan kecerdasan anak. Buletin PADU, 2002; 1(2): 19-27.
15. Widyastuti D, Ismail D, Gamayanti IL. Kemampuan visual motorik dan numerik murid taman kanak-kanak terpadu di Yogyakarta. Yogyakarta: INSKA RSUP Dr. Sardjito General Hospital, 2003.